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## EDUCATIONAL DIAGNOSIS.

THERE is no greater need in our schools than a better method of educational diagnosis. This paper does not present a "method" of doing a certain kind of educational work, but it aims at presenting a better method of finding out what work ought to be done.

Let us accept the statement that the true purpose—indeed the only excuse—for which a school exists is *to fit a child to live in his world*. As we say of self-consciousness, this is just a fact; it needs no argument. But we must specify what "to live" means. This must be determined before we can possibly go on.

It will be seen at once that the simple knowledge of studies will not fit one to live. People thus provided are usually pitiful failures. We must study life as it is today and as it is likely to be in the coming generation, and thus determine the qualities which, developed in a man, would fit him to live in his world. These qualities, when once determined, would of course become the *specific* purposes of the educative process. They are not hard to discover, and when found it is astonishing that scarcely one of them is a clearly defined aim of the schools of today; and that scarcely one of them will be developed, other than by accident, by the general teaching of today.

When we make a study of life, we see at once that in our attention to the book we have frequently forgotten to watch the growth of the child. It is no wonder that a student once said to me: "Why has none of our teachers ever said anything to us about *us*, when it is about us that we should know?" Verily, verily!

Such a state of affairs will show us at once that schools should be places where children are trained to the acquirement of qualities instead of places where they are simply to learn things. They will carry away from such a school a dozen times as many "things" when the books are used as means for training

in qualities as they will carry away when the books are used as ends. The idea which a teacher usually has of his duty to a child is to furnish him with a certain amount of knowledge of a particular kind, or in other words, that the school is to build his mind on a water-tight compartment plan. This seems to me to be very ridiculous. *Each* teacher should teach the *whole* child, for there is not any time during which the child cannot have opportunities to go through processes in the many qualities which would fit that child for successful living in his world.

The most successful teaching in the world, as far as the attainment of a rational purpose is concerned, is found in the physical gymnasiums of today. The director of a good gymnasium has almost attained perfection in the definiteness of his purposes and the excellence of his methods for their attainment. He has succeeded because of his excellent method of diagnosis. It will pay to study the method of these directors. Let us see how they form their purposes and how they attain them.

First, these wise teachers form a perfectly clear purpose which is not a catchword. *They want to develop a physical man.* So they have to determine first — What is a physical man? To find out this, they have made many investigations so that they may determine what measurements will most thoroughly test a physical man. Then with these measurements, they have examined thousands of men. From these examinations, they have determined what are normal proportions for men of all heights and weights. Then they prepared what they call an “anthropometric chart.” This contains norms in all particulars for men of all heights and weights. These norms are the final purposes of the directors in their teaching.

This chart, as will be seen, has on the left the items of measurements which will thoroughly test a man physically. To the right of this is a column for the measurements of a particular man. Further to the right are measurements running from 1 to 99, in the columns under which are given specified normal proportions of men of all possible sizes. The chart in the first column, under the figure 1 on the left, shows that out of a

large number of men, but one has as poor measurements as those shown in this column. In the middle is a column which shows the measurements of the average man; while to the extreme right is the record of an almost ideal man, who has the magnificent proportions shown in the column under the figure 99. In the

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PER CENTS.		1	2	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	95	98	99	
Weight	150	1033	1075	1139	1175	1233	1264	129	1313	1336	1355	1375	1395	1415	1435	1454	1477	150	1526	1557	1591	1657	1715	1757	
Height	60	624	631	637	647	652	656	658	662	665	667	67	672	675	678	68	683	686	689	693	698	705	714	723	
Breadth of Shoulders	16.5	142	145	148	151	153	154	155	157	158	159	16	161	162	163	164	165	166	167	169	17	174	177	18	
- - Chest - coat	-	86	88	91	94	96	97	98	99	10	101	102	103	104	105	106	107	109	111	114	117	12	123	128	
- - Chest - expd.	11.5	93	95	98	101	103	105	107	109	11	111	112	113	116	117	118	119	122	125	128	132	135	14		
Depth - Chest - coat	-	63	64	65	66	67	67	68	69	7	7	7	71	7	71	72	73	74	76	78	8	82	85	88	
- - Chest - expd.	8	7	71	72	73	74	75	76	78	79	79	79	8	8	81	82	83	85	87	89	91	93	97	10	
Neck - CIRCUM.	14.6	122	124	127	13	132	134	135	136	137	138	139	14	141	142	144	145	146	147	149	151	154	157	159	
Chest Contracted	27.7	299	304	312	319	323	327	33	333	335	338	34	342	343	347	35	352	353	358	362	366	373	381	386	
Chest Expanded	39	323	329	338	346	352	356	36	363	366	369	372	375	378	381	383	387	39	394	398	403	412	421	427	
Waist	37	248	253	262	269	274	278	282	285	288	291	293	296	299	301	304	307	31	313	317	323	33	339	344	
Right Forearms	10.5	9	92	94	97	98	10	101	102	103	104	105	105	106	107	108	109	11	111	112	114	116	119	121	
Right Upper Arm Down	12	83	86	9	94	96	98	10	101	103	104	106	107	108	11	111	112	114	116	118	12	124	128	131	
Right Upper Arm Up	13.7	99	102	105	109	11	113	115	116	118	119	12	121	123	124	125	126	128	13	131	134	138	141	144	
Left Forearms	10.3	9	92	94	97	98	10	101	102	103	104	105	105	106	107	108	109	11	111	112	114	116	119	121	
Left Upper Arm Down	11.3	83	86	9	94	96	98	10	101	103	104	106	107	108	11	111	112	114	116	118	12	124	128	131	
Left Upper Arm Up	13.3	99	102	105	109	11	113	115	116	118	119	12	121	123	124	125	126	128	13	131	134	138	141	144	
Right Thighs	23	17	173	179	184	188	191	193	195	197	199	201	202	204	206	208	21	212	214	217	22	226	231	235	
Right Calf	15.7	116	119	123	126	128	13	132	133	135	136	137	138	14	141	142	143	145	147	148	151	154	158	161	
Left Thighs	22.7	17	173	179	184	188	191	193	195	197	199	201	202	204	206	208	21	212	214	217	22	226	231	235	
Left Calf	15.3	116	119	123	126	128	13	132	133	135	136	137	138	14	141	142	143	145	147	148	151	154	158	161	
Lung Capacity	12.8	162	176	192	205	212	220	228	236	240	245	250	254	258	261	264	270	273	282	290	302	315	330	348	
Grip - Right	-	65	75	85	90	95	100	105	109	113	117	121	124	127	130	134	138	142	147	152	159	169	175	190	
Grip - Left	-	65	75	85	90	95	100	105	109	113	117	121	124	127	130	134	138	142	147	152	159	169	175	190	
Strength Back	-	186	210	230	248	265	275	287	298	308	320	330	338	348	356	367	376	385	395	410	430	465	485	505	
- - Legs	-	250	275	300	325	350	365	380	395	410	423	433	445	457	463	476	490	515	540	575	610	645	685	725	
Tip	3	0	0	12	34	48	6	7	7.9	87	95	102	11	118	125	133	141	15	16	172	186	208	232	248	
Full Up	4	0	0	17	35	44	52	6	6.7	73	79	84	9	96	101	107	113	12	12.7	136	147	163	181	193	

other columns are shown the proportions of a certain number of men receding each way from the center with reference to the frequency of such individuals. To the left of the center the cases get fewer and fewer where men have such poor proportions, while at the same time on the right the number grows smaller and smaller of those that have such magnificent proportions.

Now, the gymnasium director has on this chart the measure-

ments of normal men of all heights and weights so that whatever man he measures he has for him a norm. This norm is the director's *general* purpose. The specified measurements under the man's height or weight are the *specific* purposes. Thus he has prepared an excellent basis for a correct diagnosis.

Then a particular man is measured. If his measurements make a straight line down from his height or weight, he is properly proportioned, and is only to be generally developed, or even kept as he is, if grown.

If his line is zigzag, as in the chart presented here, the purposes of the gymnasium director become very definite at once. He does not have to guess. The measurements under the subject's height or weight are the desiderata or limits. The actual measurement in any particular is the variable which must be made to approximate toward the limit or purpose, so that when the measurements are completed the director has as complete specifications for his task of making a physical man as has an architect for making a building when his drawings are completed. Now the director knows what to do. In other words, his diagnosis has given him specific purposes and from these it is not difficult to deduce logical steps of what to do. So he has easily found his second item for philosophical doing—the necessary steps to be taken in order to attain the purpose formed.

No director on earth would be so foolish as to take a complete book of exercises and start a person at the beginning and have him "go through it," for he might develop his man in a measurement where he is already overdeveloped, as is the man in the chart with reference to measurements at the waist. Neither would any doctor on the face of the earth start a man at the beginning of a book of prescriptions and "take him through," unless he had an offensive and defensive alliance with the undertaker.

But this is exactly what we do. Thus, for example, we teach rhetoric and grammar, not considering for a moment what training purpose is to be subserved by the several exercises. Mayhap a child is already overdeveloped in the very thing we give him

to study, and so we make him lopsided. I know a little girl who is compelled to drone over the lessons in her third reader when she knows nearly all of them by heart, and is also familiar with her fourth and fifth reader, in which she is tacitly promised a long hereafter of punishment. What effect must this have on one's zeal to grow? Such a school becomes an intolerable bore to a child, and it is no wonder it wants to get out and away. Thus we make the child exist for the system, instead of the system for the child. Thus we lose sight of the real purpose—*the growth of the child*. Such a method would make a farmer forbid the corn in the rich bottom land to outgrow the corn in the clay on the hill.

I have inserted in this article an actual anthropometric chart (p. 435). This is a chart of a real man. It will bear some patient investigation from the desiring teacher. It is the chart of an abnormally unsymmetrical man. Now look over the chart and notice the remarkable asymmetry of his proportions. Would any gymnasium director think of starting such a man into the first exercise of a book of exercises without making a diagnosis? The chart at once shows that this man is short on lung power and long on appetite. He should have a lung capacity of 273 cubic inches, whereas his actual capacity is only 128. Thus the purpose of the gymnasium director is to develop this capacity from 128 to 273. 128 is the variable which must be made to approximate toward the limit, 273. Now he has a definite purpose. Definite steps at once determine themselves, and means at once to come to hand, and they are *means*.

I may as well stop here to say that there is one law we must observe in all cases. It is at the bottom of evolution and evolution is at the bottom of all true teaching. It is this: *In order to develop a quality, one must go through processes in this quality. There is no other way.* If a race horse should be able to read a book on "How to Grow Swift," it would not make him swift. To read a book on "How to Grow Strong," will not make a man strong. To read a book on rhetoric will not enable a man to speak or write, and so on, without exception. No amount of knowledge of self-control will develop self-control. Nothing

but persistent self-control will develop self-control. And yet in college we studied moral philosophy *intellectually*, thus never getting in sight of the suburbs of *moral doing*. If it were not pathetic it would be ludicrous to see a dear old reverend college professor teaching *moral philosophy intellectually*, hoping that when the students should be able to pass a good examination in the subject they would become men of ethical life. Nothing but breathing exercises will increase the lung capacity of the man in the chart; and nothing but intellectual practice will produce intellectual acuteness; and nothing but moral doing will develop moral habit.

I have shown how truly philosophical is the director in a good gymnasium. It is known to every thinker that the steps of the doing of tasks, when properly done, are alike, no matter what the material worked upon. Now is it not incumbent upon us to look about us for a rational solution of our problem? Let us apply to our case the method of diagnosis of the physician and the gymnasium director. It is the only rational way. Let us for a time lay aside our books on "method." I have now before me three such books of three famous American "educators," and not one of these books discusses clearly a rational specified purpose, but all plunge into a discussion of a method, with scarcely a word about the educational diagnosis of the case to which their "method" is to be applied! As I have said, a method without a purpose is unthinkable, and these books are unthinkable. They are wrong from beginning to end, for they have no purpose.

What shall we do about the matter of diagnosis?

First, we all agree that *education should fit a man to live completely in his world*. We must not stop with this catch-word, but, like the gymnasium director, we must subdivide our general purpose into specifications and determine what "to live" means. There is only one way. To determine this we must study life around us, and find out what qualities are required to fit a man to live completely in his world in order that we may find a basis of diagnosis for the individual child.

A study of life or of sociological conditions will at once

show that in our educational work we have fallen short in two fundamental particulars.

1. We have not studied life, nor determined what qualities would fit a man to live in his world.

2. We have not taken the lesson of evolution, which has been patent to everybody, that to develop these qualities *we must go through processes in them*, and that by this method only can these qualities be developed. The person who knows all about these qualities and their attainment no more possesses the qualities than does a novice who has bought a set of carpenters' tools possess the qualities of a carpenter.

What does "to live" mean? It means to possess as habits, and to put skillfully into practice, in our environment of men and things, the qualities which our sociological environment indicates as necessary to complete living.

I submit in the following biometric chart a list of qualities which I have found applicable to the teaching of students in a class in English. I call this chart "biometric" because, as the anthropometric chart is a method of measuring the physical man, this is a method of measuring a man's life.

Following the excellent method of the gymnasium director, we are able to lay out our work in this chart in such a form as makes our purposes, steps, and means definite and specific.

As the measurements on the anthropometric chart are the measurements of a physical man, so are the qualities on the left of this chart measurements of a particular man, intellectually and ethically. I do not present these qualities as at all final. They are, as I have said, simply a set of qualities which I have found it possible to develop in a class in English. The vacant lines beneath the qualities are for the addition of such qualities as particular pupils may wish to attain, and in which they desire the teacher's judgment. I should here perhaps give a definition of the meaning of the qualities given on this chart.

#### MEANING OF QUALITIES ON THE BIOMETRIC CHART.

1. *Direction following*.—As most students will, in life, be employed by others, and as in our highly organized world of



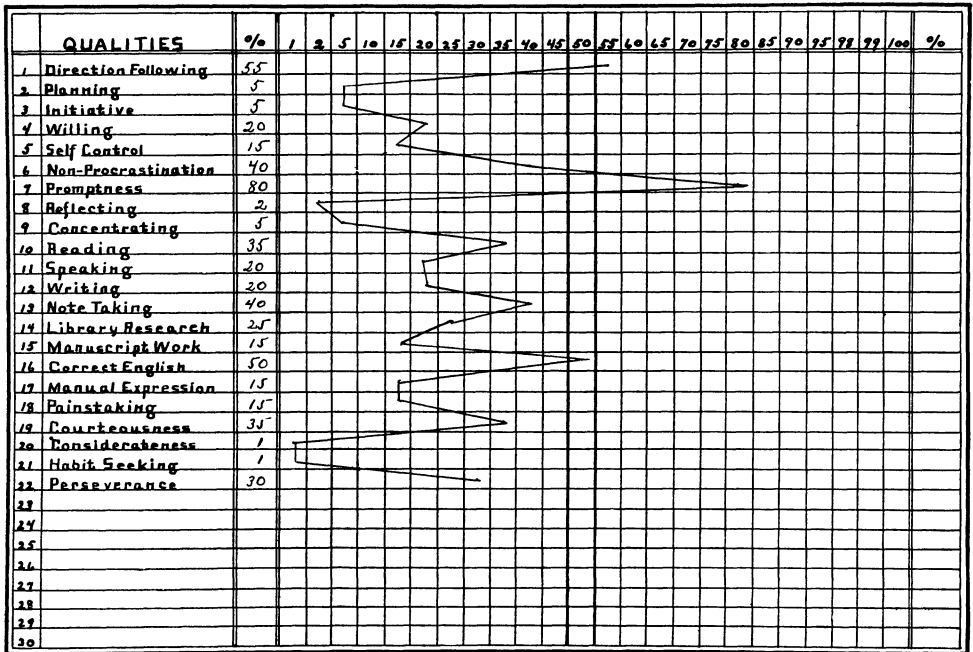
today these employers have systems by which all their work must be done, such employment requires the power of minutely and faithfully following directions. The employer himself must also follow the directions of the plan which he has formed. This habit is a pre-essential to almost everything else.

### BIOMETRIC CHART

Steele High School  
Dayton, Ohio  
1901-'02

applied to  
Students in English

77 or 87  
Senior Class  
Nov. 12, 1901



Designed by  
William I. Crane  
Teacher of Boys and Girls

2. *Planning*.—This quality implies that there is such a thing as a *science* of planning,<sup>1</sup> which can be learned, and made into a habit. Only a small minority of men can plan. Therefore the rest toil under them, because the majority cannot plan. Following the directions of others should be developed into an ability to plan for oneself.

<sup>1</sup>The author of this article has developed the science of planning in a small volume, as yet unpublished, and called *Elements of Organization*.

3. *Initiative*.—This means that we shall not wait for others to tell us to do things which we know are necessary for our training, but that we shall force ourselves to start toward the doing of those things. The student who does not develop this power will sit down on a milestone of life and wait for somebody to start him. The difference between a student who has initiative and a student who has not is the difference between a steamship and a sailship. The one has its motive power within, the other is wholly dependent upon winds and tides.

4. *Willing*.—This implies the development of the absolutely necessary power of forcing ourselves to do what we ought to do and do not want to do, and to refrain from doing what we want to do and ought not to do.

5. *Self-control*.—Self-control, in this case, is intended to a large degree to mean self-restraint, as even initiative and willing may develop into intemperance. Self-control is the noun which represents the old Greek motto, "Never too much."

6. *Non-procrastination*.—Procrastination is the worst fault in life. It is the habit of putting off the doing of a task, although the impendency of the task makes us miserable. Each day brings its duties without the burden of yesterday's. This habit can be broken only by forcing oneself into the immediate doing of tasks, or into the state of non-procrastination.

7. *Promptness*.—This means "on the spot ;" neither late nor early.

8. *Reflecting*.—This is a most difficult thing to do. It consists in holding one's mind down to a subject and in bringing into consciousness everything one knows concerning it until nothing else occupies the mind. It also implies the power to think out or organize a subject which the mind is dwelling upon, until the subject becomes perfectly clear. Complete living without this power is not possible.

9. *Concentrating*.—This is meant to be the complement of reflection. It means here the development of the power of banishing everything from the mind except that upon which the mind is working.

10. *Reading*.—This implies the development of the power of

drawing out from behind the printed words and realizing in one's own mind the images, thoughts, and emotions of another.

11. *Speaking*.—This implies the power of *orally* conveying to another in clear, correct, and concise English, whatever the speaker is capable of thinking.

12. *Writing*.—This means the conveying *in writing* to another in clear, correct, and concise English, whatever the writer is capable of thinking.

13. *Note taking*.—This implies the development of the power of taking down on paper in correct manuscript form, the outline of a speech or lecture without the hearer's attention being attracted from his hearing to his writing.

14. *Library research*.—This implies the development of the power of finding in a library, without personal assistance, and collecting from books all the material upon a certain subject contained in the said library.

15. *Manuscript work*.—This means the development of the power to express one's thoughts on paper in perfectly legible script, and according to printers' models.

16. *Correct English*.—This explains itself. It is intended to include correct application of the rules of rhetoric and grammar, and the practice of correct spelling.

17. *Manual expression*.—This implies the development of the ability to express by the hand what the mind is capable of thinking or conceiving.

18. *Painstaking*.—This explains itself. It is absolutely essential to complete living.

19. *Courteousness*.—This implies a confirmed habit of polite conduct, based upon what *we* are willing to do or say, without reference to what anyone does or says to us in anger or retaliation.

20. *Considerateness*.—From its Latin derivation, "sitting with another," or, putting oneself in the place of another. It subtends the Golden Rule. Very few people can practice it, for very few people have definitely tried to put themselves in the place of another. To be considerate, requires as much practice as to play a piano. It is the noblest of all social qualities or characteristics.

21. *Habit seeking*.—This implies a *desire to be*. It implies that one has the *habit* of trying to acquire good habits.

22. *Perseverance*.—This has been placed last, because in the acquirement of the twenty-one qualities named above, the habit of patiently sticking to one's practice, or persevering, is necessary to their requirement.

These qualities in no wise represent a finality. They are simply the qualities, as I have said, which I have been able to induce the student to practice in my own class-room in English.

It will be seen at once that the qualities become definite purposes. The right-hand column of the chart, under the figure 100, represents a possible ideal state. In method, the biometric chart agrees in all particulars with the anthropometric chart. Each item has its limit and its variable, so that now we have a purpose, or purposes, so definite that the determination of steps is easy, and we can now determine the course of study—that bugbear—with some degree of common sense. And we see at once that a “course of study” does not consist of books and apparatus, but that it consists of the *processes* through which a child must go in order to attain the qualities requisite for complete living. When these processes are determined, the books and apparatus, or the means, are easily found. A builder does not buy brick and lumber because they look pretty, but because they fit his plans. So with what we now can choose. Having our purposes and our processes, we have now a basis of diagnosis; and books and apparatus become means for the treatment of the case.

And the purposes, the steps, and the means at once and infallibly give the method of application. This matter seems too plain and too natural to need further demonstration; but some objection may be raised to it on the ground that our diagnosis of the child is not so easy as that of the physician and the gymnasium director, because they are dealing with matter and we are dealing with mind. This objection is simply another tradition. A careful examination will show that in nearly all cases the student's state in the twenty-two qualities on the biometric chart is more easily determinable than in either the case of the physician or

the gymnasium director, for he cannot possibly get a norm as to the perfect state of health, or to a perfect physical man, as in all probabilities neither ever existed. But in nearly every case on the biometric chart, a sufficiently perfect norm is easily established, as an examination will show.

As in the physician's case, part of that which we must know is objective to us, and part is subjective to the student. We can tell absolutely when he is following directions, but he must tell us to what extent he can reflect. But this is also true of the physician who has to ask the patient whether he has a pain in his head.

The objection will also be raised that we cannot get the truth from the student in these subjective particulars. That is true as long as the present grading system exists, and the pupil knows he cannot "pass" if he tells the truth about himself. What would happen if a patient, when asked by the physician for his symptoms, knew that he would lose his job, or probably be disgraced if his symptoms were bad. The physician gets the truth because the patient knows that what he tells is a sacred secret between himself and the physician. A sufficiently perfect diagnosis of a child's mental and moral qualities can be arrived at if the child also has the fear of the grade records in the principal's office removed from him. I think that Fagin's school for pick-pockets was not a better school for immorality than that afforded by the grading system in public schools. When all fear is removed, I find myself able to get as perfect subjective data from my students as does the physician from the patient. When they know that it is inviolably secret between themselves and the teacher, they are as anxious to describe their state as is a physician's patient. This is not a matter of theory, but occurs daily in my own schoolroom. And the objections that I have mentioned arise from inexperience.

By the means that I have mentioned teachers become rational doers, and their finished product bears some resemblance to what they started out to do.

What I have shown is what the world has always placed before us, but we have persistently refused to see it.

Psychology now has its purpose—a means of diagnosis, as are anatomy, physiology, and pathology to the physician, and as are normal measurements to the gymnasium director; and our books and apparatus become means of treatment as does the pharmacy to the physician, and the gymnasium apparatus to the director.

And lastly, we must take the student into our confidence, and let him know what relation the processes through which we wish him to go bear to his future life. No student can possibly be awakened to real self-activity while in ignorance of the method of his culture. What seems to be self-activity in a student under any other conditions is simply the *ignis fatuus* of self-activity. It appears to have light, but it has no heat, and it vanishes when the student tries to light his life with it. Education is the process of purposive evolution by means of training in desirable qualities; and training is unbearable drudgery until the student is born again with the motive resulting from the knowledge of the method of his culture. And this method must be based upon a correct educational diagnosis.

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